



10/15/98

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**UTILITY  
PATENT APPLICATION  
TRANSMITTAL**

(Only for new nonprovisional applications under 37 C.F.R. § 1.53(b))

Attorney Docket No. 2348-348

First Inventor or Application Identifier Alain ZANCO

Title BOOT FOR SKI OR IN-LINE ROLLER SKATE

Express Mail Label No. EH827299815US

**APPLICATION ELEMENTS**

See MPEP chapter 600 concerning utility patent application contents.

1. ☒ Fee Transmittal Form (e.g., PTO/SB/17)  
(Submit an original and a duplicate for fee processing)
2. ☒ Specification [Total Pages **11**]  
(preferred arrangement set forth below)
  - Descriptive title of the invention
  - Cross References to Related Applications
  - Statement Regarding Fed sponsored R & D
  - Reference to Microfiche Appendix
  - Background of the invention
  - Brief Summary of the invention
  - Brief Description of the Drawings (if filed)
  - Detailed Description
  - Claim(s)
  - Abstract of the Disclosure
3. ☒ Drawing(s) (35 U.S.C. 113) [Total Sheets **4**]
4. Oath or Declaration [Total Pages **1**]
  - a. ☒ Newly executed (original or copy)
  - b. ☐ Copy from a prior application (37 C.F.R. § 1.63(d))  
(for continuation/divisional with Box 17 completed)  
[Note Box 5 below]
  - i. ☐ **DELETION OF INVENTOR(S)**  
Signed statement attached deleting inventor(s) named in the prior application, see 37 C.F.R. §§ 1.63(d)(2) and 1.33(b).
5. ☐ Incorporation By Reference (useable if Box 4b is checked)  
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered to be part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

ADDRESS TO: Assistant Commissioner for Patents  
Box Patent Application  
Washington, DC 20231

6. ☐ Microfiche Computer Program (Appendix)
7. Nucleotide and/or Amino Acid Sequence Submission  
(if applicable, all necessary)
  - a. ☐ Computer Readable Copy
  - b. ☐ Paper Copy (identical to computer copy)
  - c. ☐ Statement verifying identity of above copies

**ACCOMPANYING APPLICATION PARTS**

8. ☒ Assignment Papers (cover sheet & document(s))
9. ☐ 37 C.F.R. §3.73(b) Statement ☐ Power of Attorney  
(when there is an assignee)
10. ☐ English Translation Document (if applicable)
11. ☒ Information Disclosure Statement (IDS)/PTO-1449 ☒ Copies of IDS Citations
12. ☐ Preliminary Amendment
13. ☒ Return Receipt Postcard (MPEP 503)  
(Should be specifically itemized)
  - \* Small Entity ☐ Statement filed in prior application, Status still proper and desired
14. ☐ Statement(s) ☐ (PTO/SB/09-12)
15. ☒ Certified Copy of Priority Document(s)  
(if foreign priority is claimed)
16. ☒ Other: check for \$830.00

\* NOTE FOR ITEMS 1 &amp; 14: IN ORDER TO BE ENTITLED TO PAY SMALL ENTITY FEE, A SMALL ENTITY STATEMENT IS REQUIRED (37 C.F.R. § 1.37), EXCEPT IF ONE FILED IN A PRIOR APPLICATION IS RELIED UPON (37 C.F.R. § 1.38).

17. If a CONTINUING APPLICATION, check appropriate box, and supply the requisite information below and in a preliminary amendment:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP)

of prior application No. \_\_\_\_\_

Prior application information: Examiner \_\_\_\_\_

Group / Art Unit: \_\_\_\_\_

**18. CORRESPONDENCE ADDRESS**☐ Customer Number or Bar Code Label

(Insert Customer No. or Attach bar code label here)

or ☒ Correspondence address below

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Signature		Date	10/15/98

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# FEE TRANSMITTAL

Patent fees are subject to annual revision on October 1.  
These are the fees effective October 1, 1997.  
Small Entity payments must be supported by a small entity statement,  
otherwise large entity fees must be paid. See Forms PTO/SB/09-12.  
See 37 C.F.R. §§ 1.27 and 1.28.

TOTAL AMOUNT OF PAYMENT (\$) 830.00

## Complete if Known

Application Number \_\_\_\_\_  
Filing Date \_\_\_\_\_  
First Named Inventor Alain ZANCO  
Examiner Name \_\_\_\_\_  
Group / Art Unit \_\_\_\_\_  
Attorney Docket No. 2348-248

## METHOD OF PAYMENT (check one)

1. ☒ The Commissioner is hereby authorized to charge indicated fees and credit any over payments to:  
Deposit Account Number 11-0215  
Deposit Account Name \_\_\_\_\_  
☒ Charge Any Additional Fee Required Under 37 C.F.R. §§ 1.16 and 1.17 ☐ Charge the Issue Fee Set in 37 C.F.R. § 1.18 at the Mailing of the Notice of Allowance

2. ☒ Payment Enclosed:  
☒ Check ☐ Money Order ☐ Other

## FEE CALCULATION

### 1. BASIC FILING FEE

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
101 790	201 395	Utility filing fee	790
106 330	206 165	Design filing fee	
107 540	207 270	Plant filing fee	
108 790	208 395	Reissue filing fee	
114 150	214 75	Provisional filing fee	
SUBTOTAL (1)			(\$ 790)

### 2. EXTRA CLAIM FEES

Total Claims	Extra Claims	Fee from below	Fee Paid
11	-20**	0	0
Independent Claims	1	-3**	0
Multiple Dependent			0

\*\*or number previously paid, if greater; For Reissues, see below

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
103 22	203 11	Claims in excess of 20	
102 82	202 41	Independent claims in excess of 3	
104 270	204 135	Multiple dependent claim, if not paid	
109 82	209 41	** Reissue independent claims over original patent	
110 22	210 11	** Reissue claims in excess of 20 and over original patent	
SUBTOTAL (2)			(\$ 0)

## FEE CALCULATION (continued)

### 3. ADDITIONAL FEES

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
106 130	206 65	Surcharge - late filing fee or oath	
127 50	227 25	Surcharge - late provisional filing fee or cover sheet	
139 130	139 130	Non-English specification	
147 2,520	147 2,520	For filing a request for reexamination	
112 920*	112 920*	Requesting publication of SIR prior to Examiner action	
113 1,840*	113 1,840*	Requesting publication of SIR after Examiner action	
115 110	215 55	Extension for reply within first month	
116 400	216 200	Extension for reply within second month	
117 950	217 475	Extension for reply within third month	
118 1,510	218 755	Extension for reply within fourth month	
128 2,060	228 1,030	Extension for reply within fifth month	
119 310	219 155	Notice of Appeal	
120 310	220 155	Filing a brief in support of an appeal	
121 270	221 135	Request for oral hearing	
138 1,510	138 1,510	Petition to institute a public use proceeding	
140 110	240 55	Petition to revive - unavoidable	
141 1,320	241 660	Petition to revive - unintentional	
142 1,320	242 660	Utility issue fee (or reissue)	
143 450	243 225	Design issue fee	
144 670	244 335	Plant issue fee	
122 130	122 130	Petitions to the Commissioner	
123 50	123 50	Petitions related to provisional applications	
126 240	126 240	Submission of Information Disclosure Stmt	
581 40	581 40	Recording each patent assignment per property (times number of properties)	40
146 790	246 395	Filing a submission after final rejection (37 CFR 1.129(a))	
149 790	249 395	For each additional invention to be examined (37 CFR 1.129(b))	
Other fee (specify) _____			
Other fee (specify) _____			
* Reduced by Basic Filing Fee Paid			
SUBTOTAL (3)			(\$ 40)

## SUBMITTED BY

Typed or Printed Name Ronald R. Santucci

Signature

*Ronald R. Santucci*

Date 10/15/98

## Complete (if applicable)

Reg. Number 28,988

Deposit Account User ID

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Express Mail # EH827299815US

ZANCO Alain

VOIRON / FRANCE

BOOT FOR SKI OR IN-LINE ROLLER SKATE

FIELD OF THE INVENTION

5           The invention relates to a boot for a ski or  
in-line roller skate, having a flexible upper, the  
sole of which has a rigid part in the rear region of  
the boot, over about one half of the length of the  
sole, and the rest of the sole of which is flexible  
10 so as to allow the foot to flex during walking.

PRIOR ART

15           When ski boots were made of leather, the sole  
still retained a degree of flexibility which made it  
possible to walk without excessive difficulty. With  
the arrival of plastic boots, the upper, and more  
particularly the sole, acquired rigidity which  
provided an excellent interface between the foot and  
20 the ski through the ski binding, but made it  
difficult to walk normally because the sole did not  
flex at all at the metatarsophalangeal joint.  
Together with the sport of snowboarding, with which  
much more walking is involved, relatively flexible  
25 boots appeared. In order for them to be fastened to  
the gliding board, some of these boots are provided  
with an attached metal plate. However, this plate  
tends to become packed with snow and catch on the

ground during walking. It has also been proposed to fix a metal sheet in a longitudinal groove of the sole, between the metatarsophalangeal joint zone and the heel (EP 0 719 505). These plates and sheets represent no more than auxiliary binding means. Further, the problem of snowboarding is different than that of skiing since automatic binding release is not desired, the two feet being on the same board and the degree of risk being lower.

For a number of years, attempts have been made to make it easier to walk with alpine ski boots by using a variety of methods. Patent EP-0-664 969 proposes, in a plastic boot, to provide a flexible zone forming a hinge in the metatarsophalangeal zone of the rigid sole, and to divide the shell of the boot into two parts, articulated level with said joint, these two parts also being joined together by a device which allows the articulation to be locked.

A boot designed along the same principle is also disclosed by Patent US 5 572 806. This boot differs from the previous one by the fact that the locking device is mounted so that it can slide in the thickness of the sole.

Another approach is described in Patent FR 2 130 644. It consists of a kind of auxiliary shell in which a boot with flexible upper and sole is enclosed.

Moreover, Patent FR 2 309 168 discloses a ski touring boot whose rear part has a rigid sole, while its front part has a flexible sole. This boot is, however, intended to be fixed by its ends, so that the front end of its sole has a track which is intended to engage with a front binding element. A track of this type makes it difficult to walk.

Lastly, boots are known which are intended for cross country skiing. It is absolutely necessary for these boots to be flexible in the metatarsophalangeal zone, so as to allow the foot to roll with minimal resistance. When used for the freestyle skating step, this type of boot has needed to be reinforced in the malleolar zone, but these boots, for example the boot described in document FR 2 743 988, are still cross country ski boots that only have a front binding.

As regards in-line roller skates, a boot is known which is intended to be releasably fixed on a chassis. To this end, the flexible sole of the boot has two metal hooks which attach to the chassis.

#### SUMMARY OF THE INVENTION

The object of the present invention is to provide the user with a flexible and comfortable boot which, on the one hand, makes it possible to walk with ease and, on the other hand, forms an interface between the leg and the ski or the skate, this interface being capable of withstanding the forces involved with the release of a ski binding or the engagement of a skate, respectively.

To this end, the boot according to the invention is one wherein the rigid part of the sole is designed so as to form an interface between the leg and the binding of a ski or in-line roller skate.

Since a ski is controlled substantially in extension of the tibia, a rigid interface in the region of the sole through which this extension passes is found to be quite sufficient. Further, it is known that a binding whose release axis coincides

with the tibial axis has advantages in terms of safety. It is in this way possible to design the front end of the boot freely, and in particular to give it a rounded shape that makes it particularly easy to walk.

The upper of the boot preferably comprises a rigid part which encloses the heel and is rigidly secured to the rigid part of the sole. These rigid parts form the rear of the boot and, to some extent, represent what remains of the shell of a shell boot.

In its embodiment as an alpine ski boot, in particular, the rigid part enclosing the heel will advantageously be provided with a cuff articulated to this rigid part.

One current trend in the development of alpine skiing is toward a very short ski. On a ski of this type, if the intention is to retain the original flexibility of the ski, it is no longer possible to use conventional boots and binding assemblies, because the ski becomes rigid, and no longer has the facility to work and therefore execute turns. Precisely what the boot according to the invention makes it possible to do is to bring the heel piece and the toe piece of conventional binding assemblies closer together, or even eliminate them. The rigid part of the sole will be in the form of a profiled part of standard length, that is to say independent of the boot size.

The ski binding may be further shortened by providing some of the binding means in the rigid part of the sole of the boot. These binding means may be, for example, depending on the type of binding used, pins, a rail or a different profiled part.

The binding of the boot to the ski or to the skate may thus be located in extension of the tibial axis.

5 BRIEF DESCRIPTION OF THE DRAWINGS

The appended drawing represents a few embodiments of the boot according to the invention by way of example.

10 Figure 1 illustrates the design principle of the boot according to the invention.

Figure 2 represents an alternative embodiment of the boot represented in Figure 1.

15 Figures 3 and 4 are, respectively, a side and bottom view of a first embodiment of the rigid part of a boot according to the invention.

Figures 5 and 6 are, respectively, a side and bottom view of a second embodiment of the rigid part.

20 Figures 7 and 8 are, respectively, a side and bottom view of a third embodiment of the rigid part.

Figures 9 and 10 are, respectively, a view in vertical axial section and a bottom view of a fourth embodiment of the rigid part.

25 Figures 11 and 12 are, respectively, a side and bottom view of a fifth embodiment of the rigid part.

Figures 13 and 14 are, respectively, a view in vertical axial section and a bottom view of a sixth embodiment of the rigid part.

Figure 15 represents an exploded view of a boot according to the invention, when provided with a cuff.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

Figure 1 represents an essentially flexible boot whose sole has a rigid part 1 extending from the heel toward the front over a length d1 equal to about one half of the total length of the boot d2. The rest 2 of the sole is advantageously formed by an elastomer which rises over the sides and the front of the upper to make the boot watertight. The rest 3 of the upper of the boot is made of flexible material, for example leather, flexible plastic or woven material, or a combination of these materials, reinforced at the rear of the heel region 4. The boot which is represented is provided with a lacing system, but tightening could be provided by any other means, in particular by buckles.

In the variant which is represented in Figure 2, the material of the part 2 of the sole, for example an elastomer, extends in a thin layer under the rigid part 1, in order to make walking more comfortable and to make the sole grip better.

A boot of this type can be manufactured using a variety of methods.

In the embodiments which are represented in the following figures, the rigid part 1 of the sole is preferably made of plastic and is formed integrally, by injection molding, with a part 5 that forms the rear of the upper around and above the heel and extends obliquely as far as the front end of the rigid part 1 of the sole, as represented in Figures 3, 5, 7, 9, 11, 13 and 15.

In the example which is represented in Figure 3, the rigid part 1 of the sole has a bearing surface 6 at the front, to the front of which a recess 20 is



formed in the sole 2, and a bearing surface 7 at the rear, these bearing surfaces being intended for binding the part 1 between a front ski binding element and a rear ski binding element. The length d1  
5 of the rigid part 1 could be a unique length standard for all boot sizes, which would make it easier to mount the binding elements and would eliminate the need for adjustments.

The bearing surface 7 requires a particular  
10 type of rear binding. For the use of conventional types of heel pieces, the rigid part 1 will have a conventional protruding rear bearing surface 8, as represented in Figure 5.

The rigid part 1 of the sole may have other  
15 ski binding means intended to engage with a ski or skate binding. In the embodiment which is represented in Figures 7 and 8, these binding means consist of two pairs of lateral pins 9 and 10 which are intended to engage in the notches of a binding and are capable  
20 of being locked in these notches. These binding means may also be standardized.

In the embodiment which is represented in Figures 9 and 10, the binding means are formed, in the front region of the rigid part 1, by a profiled  
25 vertical pin in the shape of a button 11, set back in a hollow of the part 1 and, at the rear, of an indentation 12 intended to accommodate a longitudinal finger of the binding.

In the embodiment which is represented in  
30 Figures 11 and 12, the binding means is a profiled part 13 located in a zone of the sole lying under the arch of the foot. This profiled part 13 extends over a short length of the rigid part 1 and by itself binds the boot to the ski, or skate, respectively.

In the embodiment which is represented in Figures 13 and 14, the binding means forming part of the boot consist of a hollow imprint 14 under the sole, this imprint having, in longitudinal section  
5 according to Figure 13, a T-shaped or dovetail profile in which expandable grippers of the ski or skate binding attach. In all the embodiments which have been described, the binding means are centered on the tibial axis.

10 The rigid part 5 is advantageously supplemented by a lower-leg cuff 15 articulated to the rigid part 5 at two opposite points 16 lying in the malleolar region. The cuff 5 which is represented in Figure 5 is a conventional cuff provided with two  
15 buckles 17 and 18 for closing and tightening it.

The rigid part 5 could be cut out or openworked, for example by a cutout extending over the rear and over the sides halfway up the part 5.

20 The rigid part 5 could have at least one diagonal tab extending obliquely forward, for example in the direction of the instep, serving as a strap or part of a strap and capable of supporting a buckle or other means for closing and tightening.

Table 1. Demographic characteristics of the study population	
Age (years)	65.0 ± 1.5
Gender (male/female)	10/10
Education (years)	12.0 ± 1.0
Occupation (white/blue)	10/10
Marital status (married/divorced/widowed)	10/10/0
Health status (good/fair/poor)	10/10/0
Smoking status (smoker/non-smoker)	10/10
Alcohol consumption (yes/no)	10/10
Family size (number of children)	2.0 ± 1.0
Income (USD/month)	1,200 ± 200
Comorbidities (hypertension/diabetes/cholesterol)	5/5/5
Medication use (yes/no)	10/10
Physical activity (yes/no)	10/10
Stress level (low/moderate/high)	10/10/0
Social support (yes/no)	10/10
Life satisfaction (yes/no)	10/10
Overall health perception (good/fair/poor)	10/10/0
Quality of life score (0-100)	75.0 ± 10.0
Depression score (0-100)	15.0 ± 5.0
Stress score (0-100)	25.0 ± 10.0
Life satisfaction score (0-100)	85.0 ± 10.0
Overall well-being score (0-100)	65.0 ± 15.0

2. The ski boot as claimed in claim 1, wherein the rigid part (1) of the sole is designed so as to form an interface between the leg and a ski binding having automatic release.

4. The boot as claimed in claim 3, wherein the rigid part (1) of the sole and the rigid part (5) of the upper are integral.

6. The boot as claimed in claim 4, wherein the rigid part (5) of the upper has at least one tab directed obliquely forward to form a strap or part of a strap.

8. The boot as claimed in claim 1, wherein the rigid part (1) of the sole is a profiled part (6, 7;

6, 8) of standard length, intended to engage with a ski or skate binding irrespective of the boot size.

9. The boot as claimed in claim 1, wherein the rigid part (1) of the sole has binding means (6, 7; 6, 8; 9, 10; 11, 12; 13; 14) intended to engage with binding means secured to the ski or the skate.

10. The boot as claimed in claim 9, wherein the binding means located on the sole consist of lateral pins (9, 10).

11. The boot as claimed in claim 9, wherein the binding means located on the sole consist of a profile part (14) located substantially in the middle of the rigid part (1) of the sole.

# ABSTRACT

A boot for a ski or an in-line roller skate has a flexible upper and a sole allowing the foot to flex during walking. Its sole has a rigid part in the rear region of the boot, over about one half of the length of the sole, this rigid part being designed so as to form an interface between the heel and a binding of the ski or in-line roller skate. The interface may be standard, that is to say independent of the boot size.

Fig.1

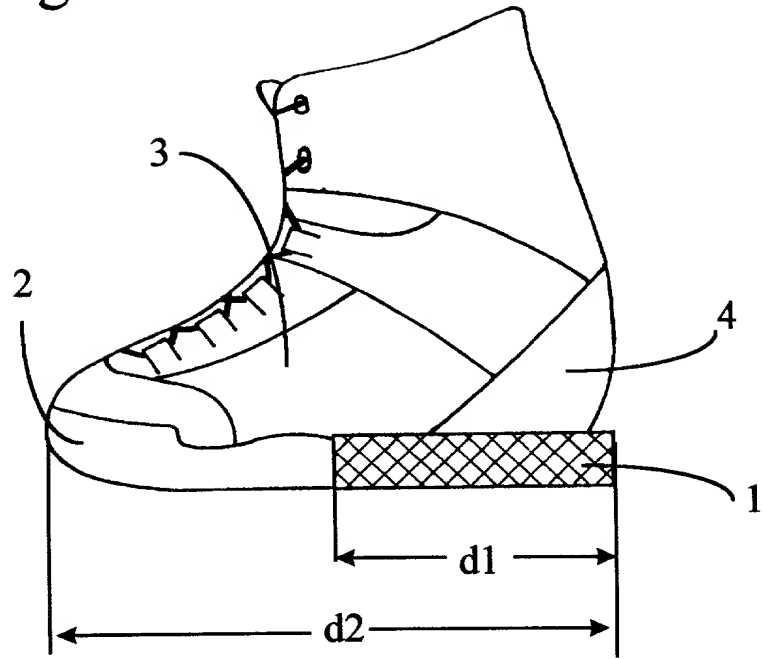


Fig.2

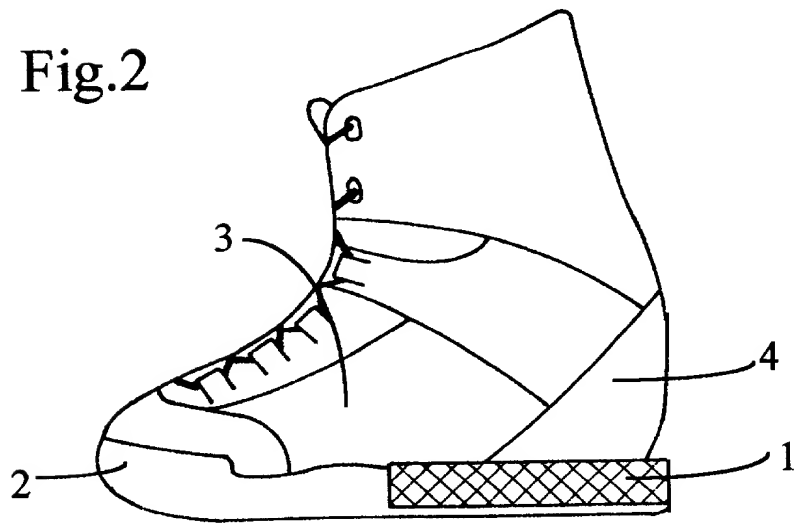


Fig.3

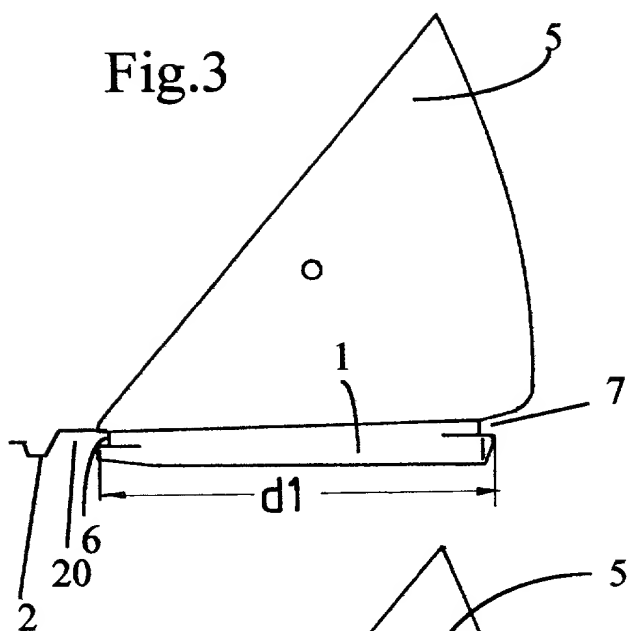


Fig.4

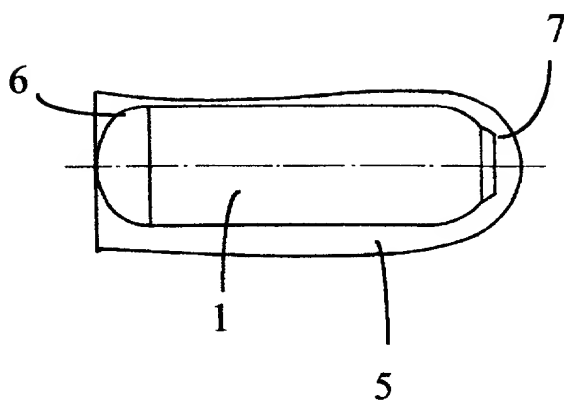


Fig.5

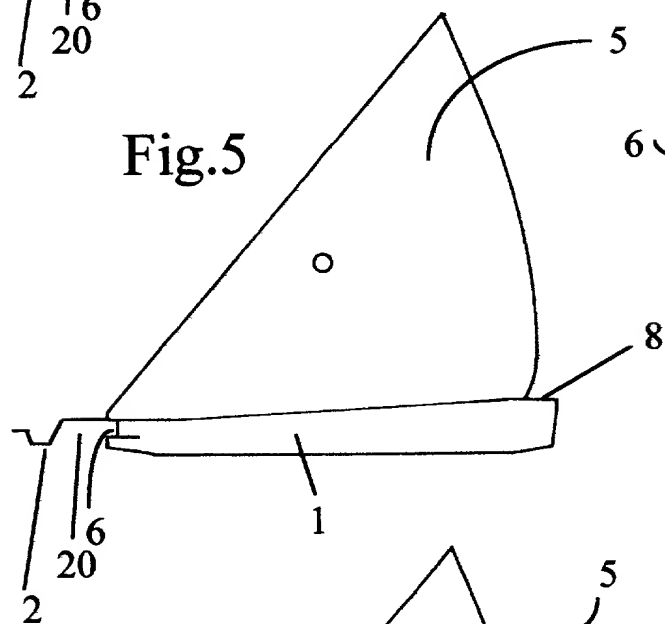


Fig.6

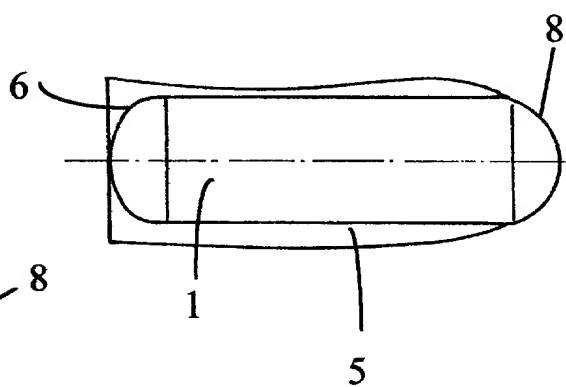


Fig.7

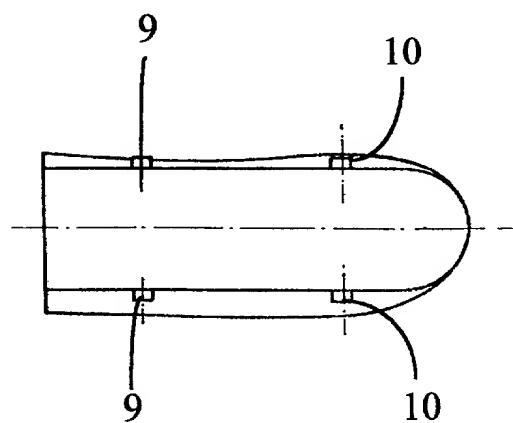
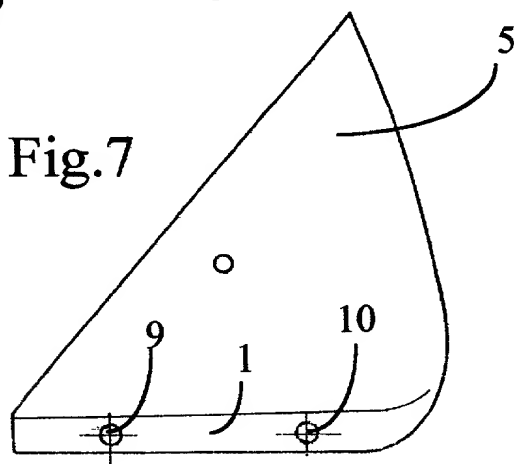


Fig.8

Fig.9

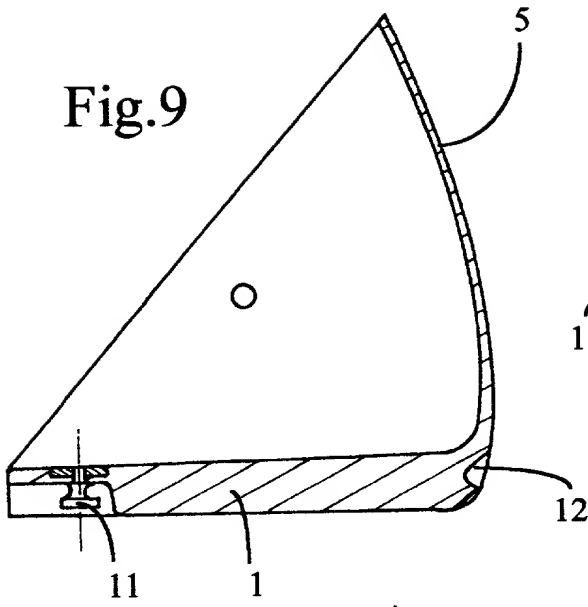


Fig.10

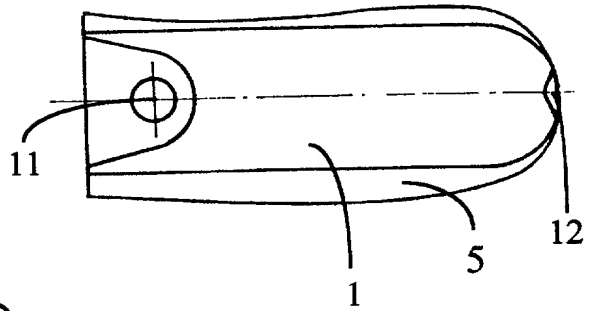


Fig.11

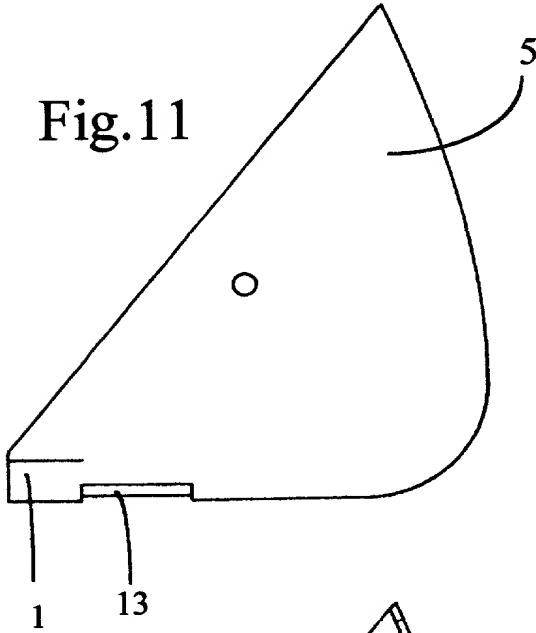


Fig.12

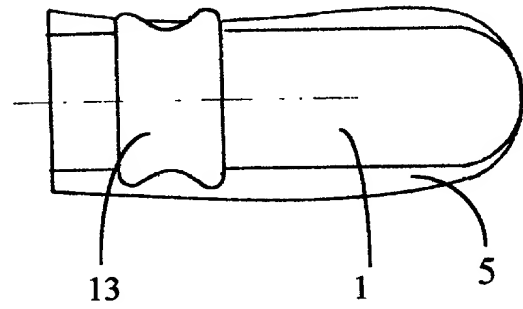


Fig.13

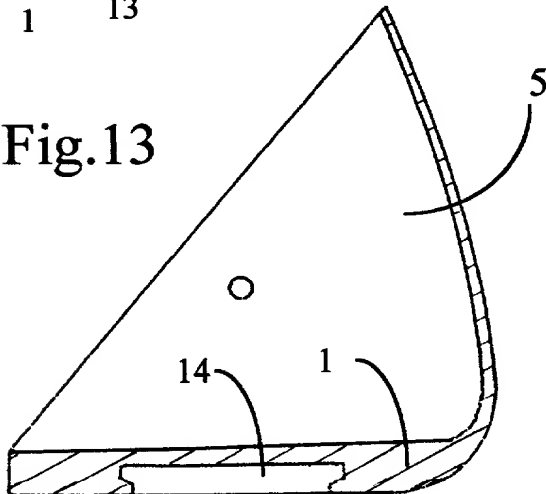


Fig.14

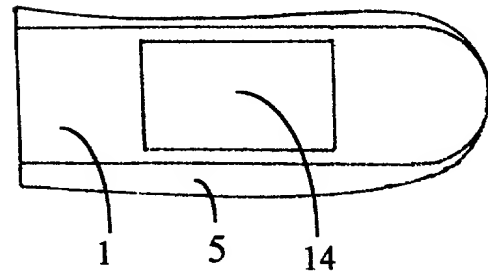
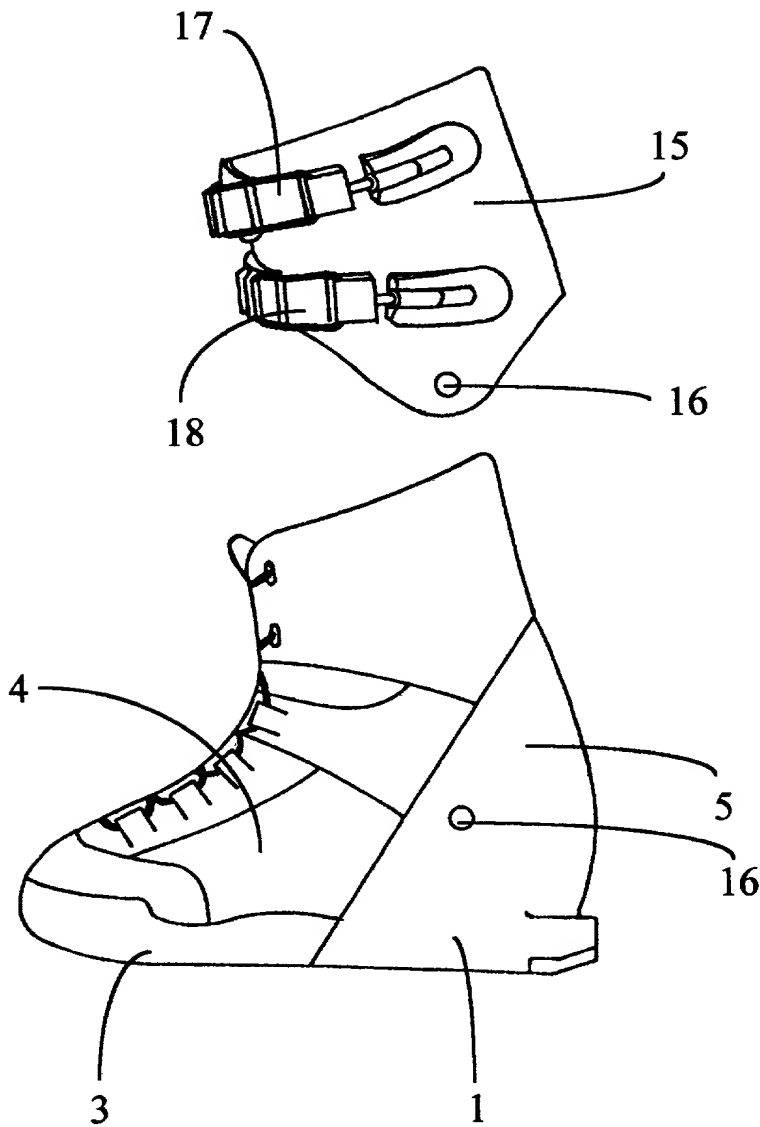




Fig.15



## DECLARATION AND POWER OF ATTORNEY - ORIGINAL APPLICATION

2348-348

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

**BOOT FOR SKI OR IN-LINE ROLLER SKATE**

the specification of which

(check one) ☒ is attached hereto

☐ was filed on \_\_\_\_\_ as

Application Serial No. \_\_\_\_\_

and was amended on \_\_\_\_\_

(if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulation, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

COUNTRY	APPLICATION NUMBER	DATE OF FILING (day, month, year)	PRIORITY CLAIMED
FRANCE	97 13260	17/10/1997	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO
			<input type="checkbox"/> YES <input type="checkbox"/> NO

I hereby claim the benefit under Title 35, United States Code §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the nation or PCT international filing date of this application:

APPLICATION NUMBER	DATE OF FILING (day, month, year)	STATUS (patented, pending, abandoned)

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) to prosecute this application and transact all businesses in the Patent and Trademark Office connected therewith. Joseph C. Sullivan, Registration No. 18,720; John Kurucz, Registration No. 18,688; Gerald Levy, Registration No. 24,419; Joseph T. Eisele, Registration No. 25,331; Ronald R. Santucci, Registration No. 28,988; Ronald E. Brown, Registration No. 32,200; John Gulbin, Registration No. 33,180; Richard J. Danyko, Registration No. 33,672 and Neil D. Marcus, Registration No. 35,267

attorney to insert the proper serial number and filing date awarded my/our application on this document

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

SIGNATURE OF INVENTOR 201 <i>Alain Zanco</i>	SIGNATURE OF INVENTOR 202 <i>[Signature]</i>	SIGNATURE OF INVENTOR 203 <i>[Signature]</i>
DATE 25 09 98	DATE	DATE